

- Instructions :**
- (1) All questions are compulsory.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data if necessary.
 - (5) Preferably, write the answers in sequential order.

Section - A

1. Attempt any **SIX** of the following : [12]
 - (a) Explain the following terms EMF, Current, Potential Difference, Power and Energy.
 - (b) Define average value of an A.C.
 - (c) State relation between phase and line current and voltages in a balanced star connection.
 - (d) What are the different types of power in AC circuit? Explain.
 - (e) Write emf equation of transformer and state the meaning of each term in it also state their units.
 - (f) Give classification of transformer on the basis of:
 - (i) Construction
 - (ii) Supply system
 - (iii) Power rating
 - (iv) Applications
 - (g) Compare resistance split phase induction motor with capacitor start induction motor.
2. Attempt any **THREE** of the following : [12]
 - (a) Compare Electric and Magnetic Circuits.
 - (b) The equation of an alternating current is $i = 62.35 \sin 628t$.
Determine: (i) Frequency (ii) Time period
(iii) Maximum value (iv) Angular velocity
 - (c) If a 3 phase 400 V, 50Hz, supply is connected to a balanced, 3 phase star connected load of impedance $(3 + j6)$ ohm per phase. Calculate :
 - (i) Phase current
 - (ii) Phase voltage
 - (iii) Power factor
 - (iv) Total active power
 - (d) A 50 KVA, 6600/250 V, 1 ϕ transformer has 52 secondary turns. Find
 - (i) No. of primary turns
 - (ii) Full load primary and secondary currents
3. Attempt any **TWO** of the following : [12]
 - (a) (i) Explain construction and working of autotransformer.
(ii) Compare auto transformer with two winding transformer (any four).

- (b) A coil having resistance of 5Ω and inductance of 0.2 H is arranged in parallel with another coil having resistance of 1Ω and inductance of 0.08 H . Calculate the current through the combination and power absorbed when a voltage of 100 V , 50 Hz is applied. Use impedance method.
- (c) (i) Explain Faradays Law of Electromagnetic Induction.
 (ii) Give the applications of Faradays Law of Electromagnetic Induction.

Section – B

4. Attempt any **FIVE** of the following : [10]
- (a) Write down a colour code for the following resistors :
 (i) $270\ \Omega, \pm 10\%$ (ii) $5.6\text{ k}\Omega, \pm 5\%$
- (b) What is voltage source and current source?
- (c) Compare RC and LC Filters.
- (d) Why Bridge Rectifier is the most widely used full-wave rectifier?
- (e) What is Bipolar Junction Transistor?
- (f) Given : $\beta = 150$, $i_B = 15\ \mu\text{A}$ and transistor is biased in the forward-active mode. To find : $i_C = ?$, $i_E = ?$, $\alpha = ?$
5. Attempt any **THREE** of the following : [12]
- (a) What are applications of LED?
- (b) Define :
 (i) Peak Inverse Voltage (PIV)
 (ii) Ripple factor
 (iii) Rectification efficiency
 (iv) Transformer Utilization Factor (TUF)
- (c) Write short note on BJT Construction.
- (d) Compare CB, CE, CC configuration of Transistor.
6. Attempt any **TWO** of the following : [12]
- (a) What are the advantages of Integrated Circuits and What are the limitations of ICs?
- (b) Compare Half And Full Wave Rectifiers.
- (c) Short note on CE configuration and CE gain β and Relation between α and β .



S.Y. Diploma Sem-III: Paper Discussion Schedule

Branches	Date	Day	Timing	Centres
Mechanical Group & Civil Group	8 Nov. 2018	Thursday	9 a.m. to 11 a.m.	Kalyan, Borivali
	8 Nov. 2018	Thursday	12 a.m. to 2 p.m.	Thane
	8 Nov. 2018	Thursday	3 p.m. to 5 p.m.	Dadar